Laboratory Response Network

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Abstract

Subject Terms

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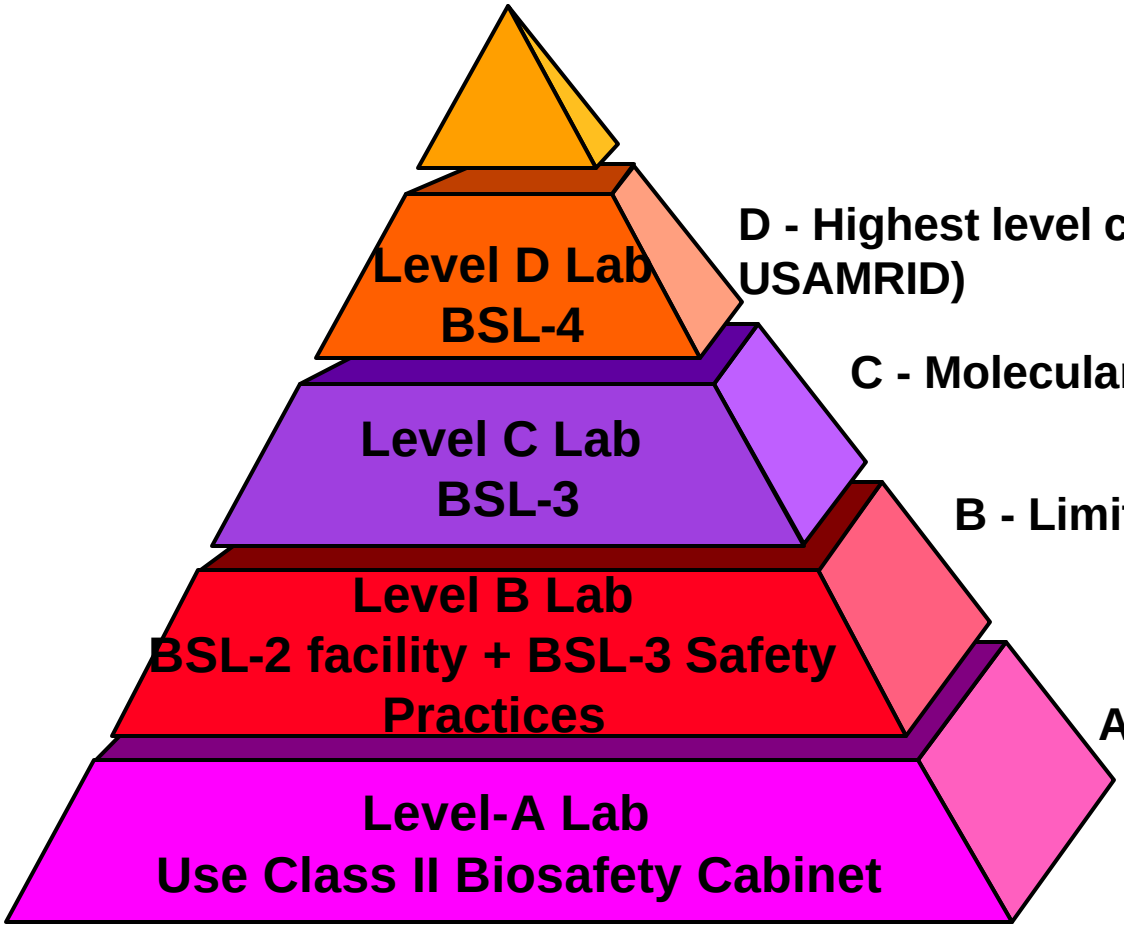
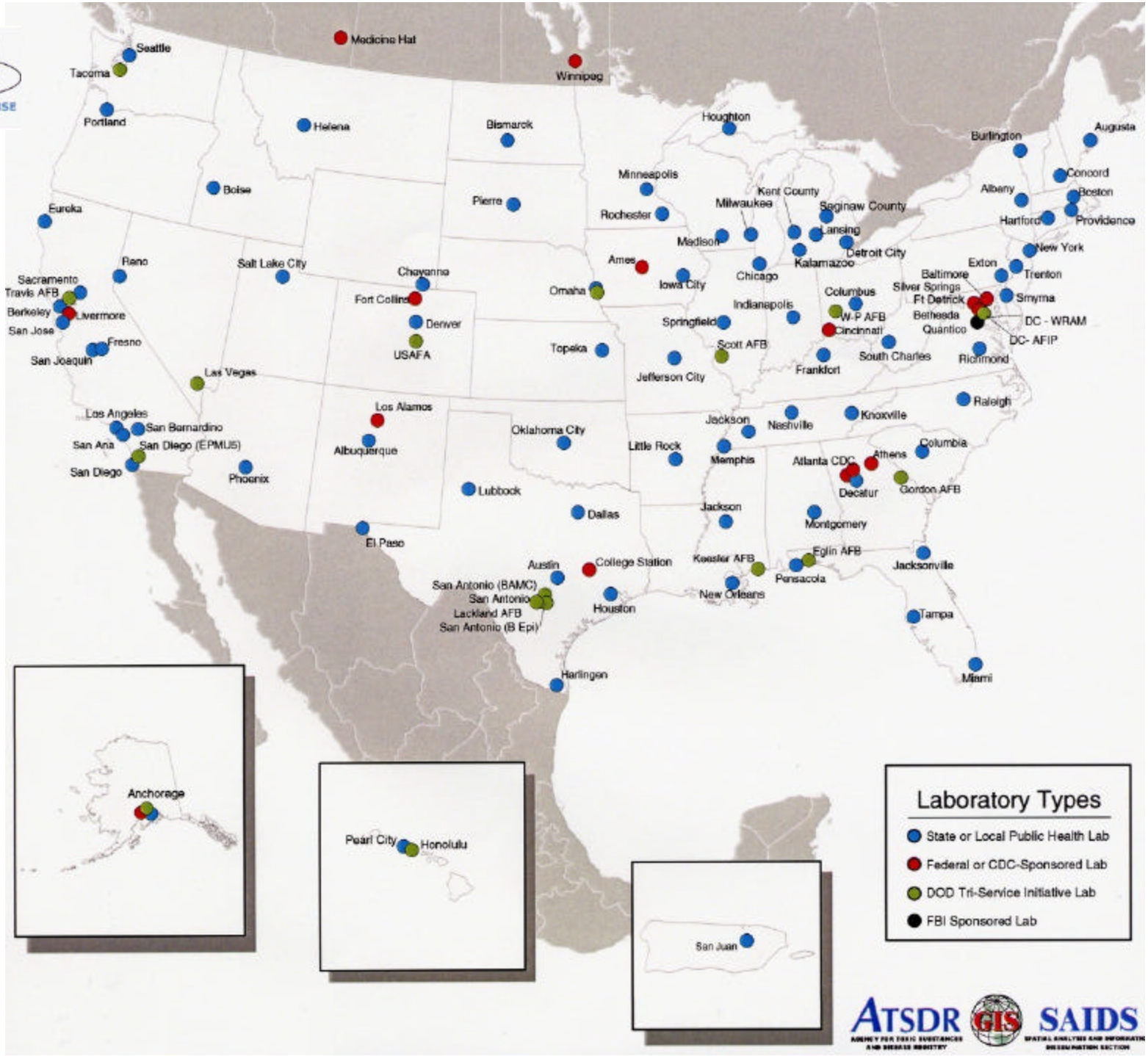
16

Laboratory Response Network For Bioterrorism




LRN
LABORATORY RESPONSE NETWORK
Seattle
Tacoma
Portland
Medicine Hat
Winnipeg
Helena
Bismarck
Houghton
Burlington
Augusta
Concord
Albany
Boston
Providence
Hartford
New York
Minneapolis
Kent County
Milwaukee
Saginaw County
Lansing
Detroit City
Kalamazoo
Chicago
Rochester
Madison
Pierre
Boise
Eureka
Reno
Salt Lake City
Ames
Iowa City
Omaha
Cheyanne
Fort Collins
Denver
USAFA
Sacramento
Travis AFB
Berkeley
Livermore
San Jose
Fresno
San Joaquin
Las Vegas
Topeka
Jefferson City
Springfield
Indianapolis
Columbus
W-P AFB
Cincinnati
Scott AFB
Frankfort
South Charles
Baltimore
Silver Springs
Ft Detrick
Bethesda
Quantico
Exton
Trenton
Smyrna
DC - WRAM
DC- AFIP
Richmond
Raleigh
Los Angeles
San Bernardino
San Ana
San Diego (EPMUS)
San Diego
Phoenix
Los Alamos
Albuquerque
Oklahoma City
Lubbock
Dallas
El Paso
Little Rock
Jackson
Nashville
Knoxville
Memphis
Atlanta CDC
Athens
Columbia
Decatur
Gordon AFB
Jackson
Montgomery
Austin
College Station
San Antonio (BAMC)
San Antonio
Lackland AFB
San Antonio (B Epi)
Houston
Keesler AFB
Eglin AFB
Pensacola
New Orleans
Jacksonville
Tampa
Miami
Harlingen
Anchorage
Pearl City
Honolulu
San Juan
Laboratory Types
State or Local Public Health Lab
Federal or CDC-Sponsored Lab
DOD Tri-Service Initiative Lab
FBI Sponsored Lab
CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION
ATSDR
GIS
SAIDS

CDC BT Rapid Response and Advanced Technology Lab

- **BSL -3**
- **Agent Identification and Specimen Triage**
- **Refer to and Assist Specialty Lab Confirmation**
- **Evaluate Rapid Detection Technology**
- **Rapid Response Team**

LRN Capacity

Specimen Collection and Transport

- Appropriate specimens
- Forensic issues and chain of custody
- Timely transport & testing safety

Capacity to Diagnose

- Surveillance
- Rapid screens - People/environment
- Definitive and trusted testing
- Secure, reliable means of electronic communication
- The right answer, to the right persons at the right time

LRN: Work-in-progress

- State and large city / county public health laboratories- secure internet website (reagents, protocols, capacity locator)
- Training and proficiency on ‘highest priority agents’
- Conventional and rapid methods
- Validation of methods
- ‘Surge capacity’

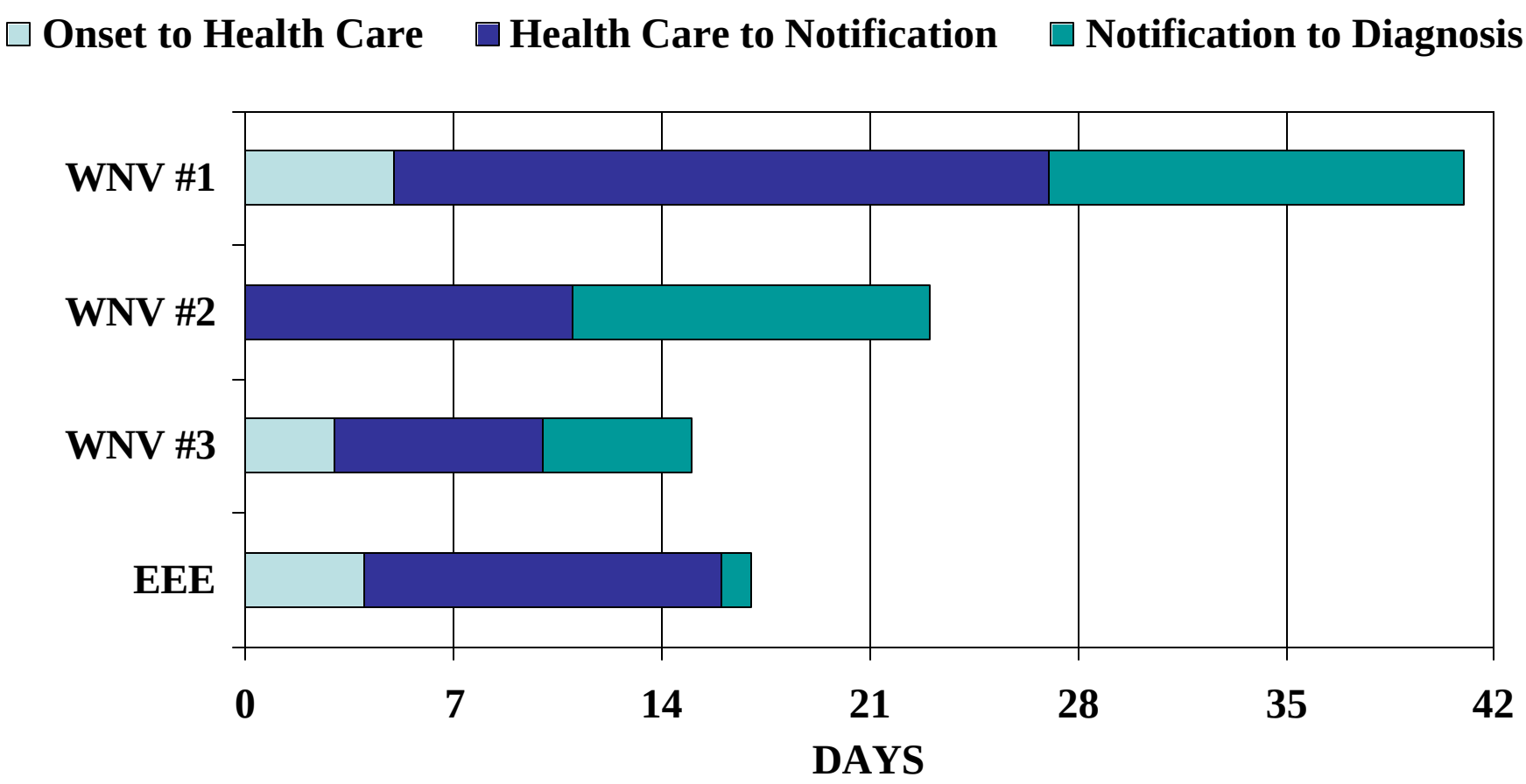
LRN: Growing capacity

- Clinical microbiology laboratories collaboration- standard protocols, rule-out testing for clinical specimens, (future) definitive identification of agents
- Building a secure system for electronic laboratory reporting of test results- the technology is not the problem
- Surge capacity- build, protect, access
- Technology and reagents to more laboratories- capacity to validate and accept

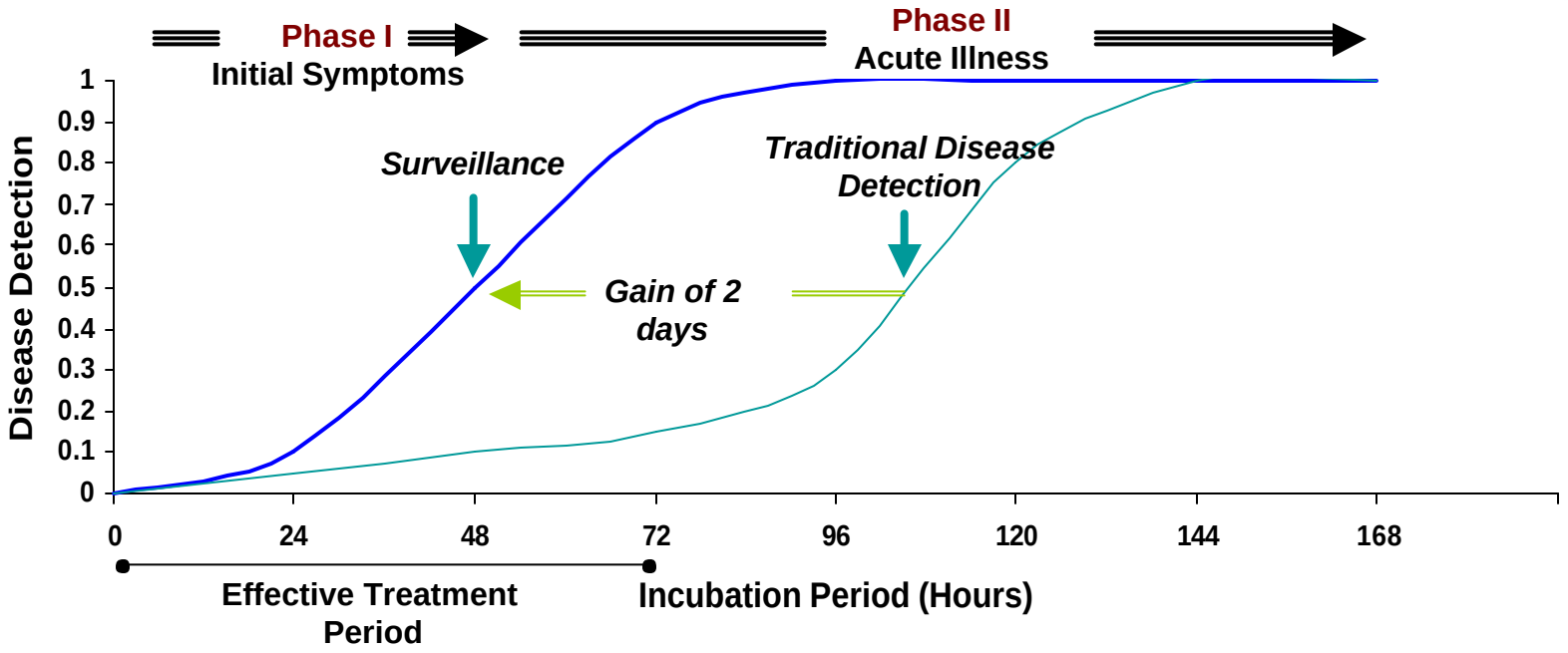
Laboratory and Testing Issues

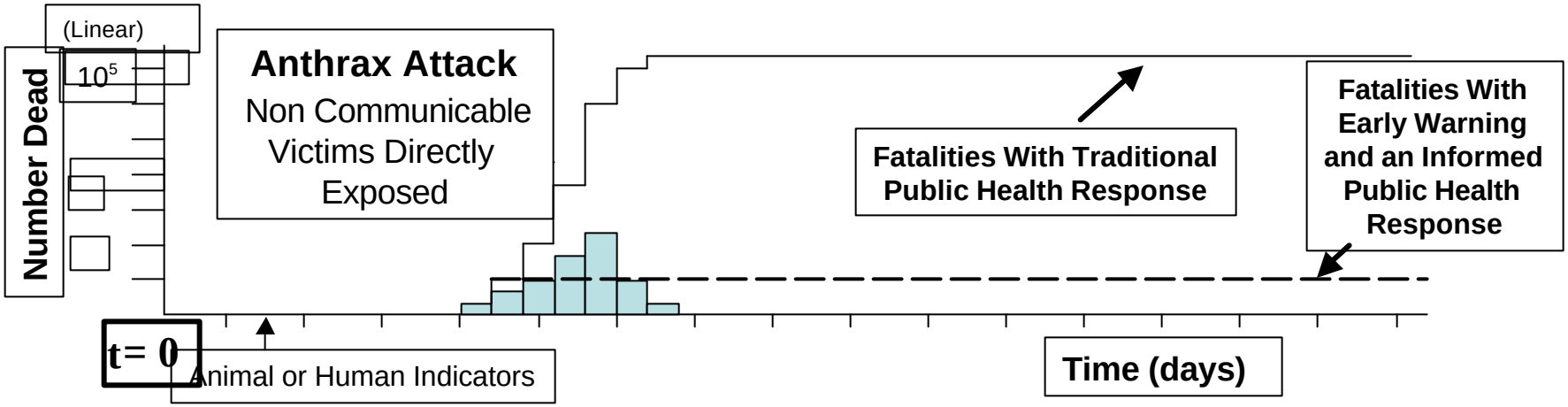
- Surveillance- Numbers of ill persons, general syndromes, laboratory-based species and DNA characteristics
- Field testing- First responders, environmental, risk characterization
- Laboratory diagnosis of human and animal illnesses- coordination and communication
- 24/7 available and accessible capacity

Human Arbovirus Cases, MA Timelines: Onset to Diagnosis

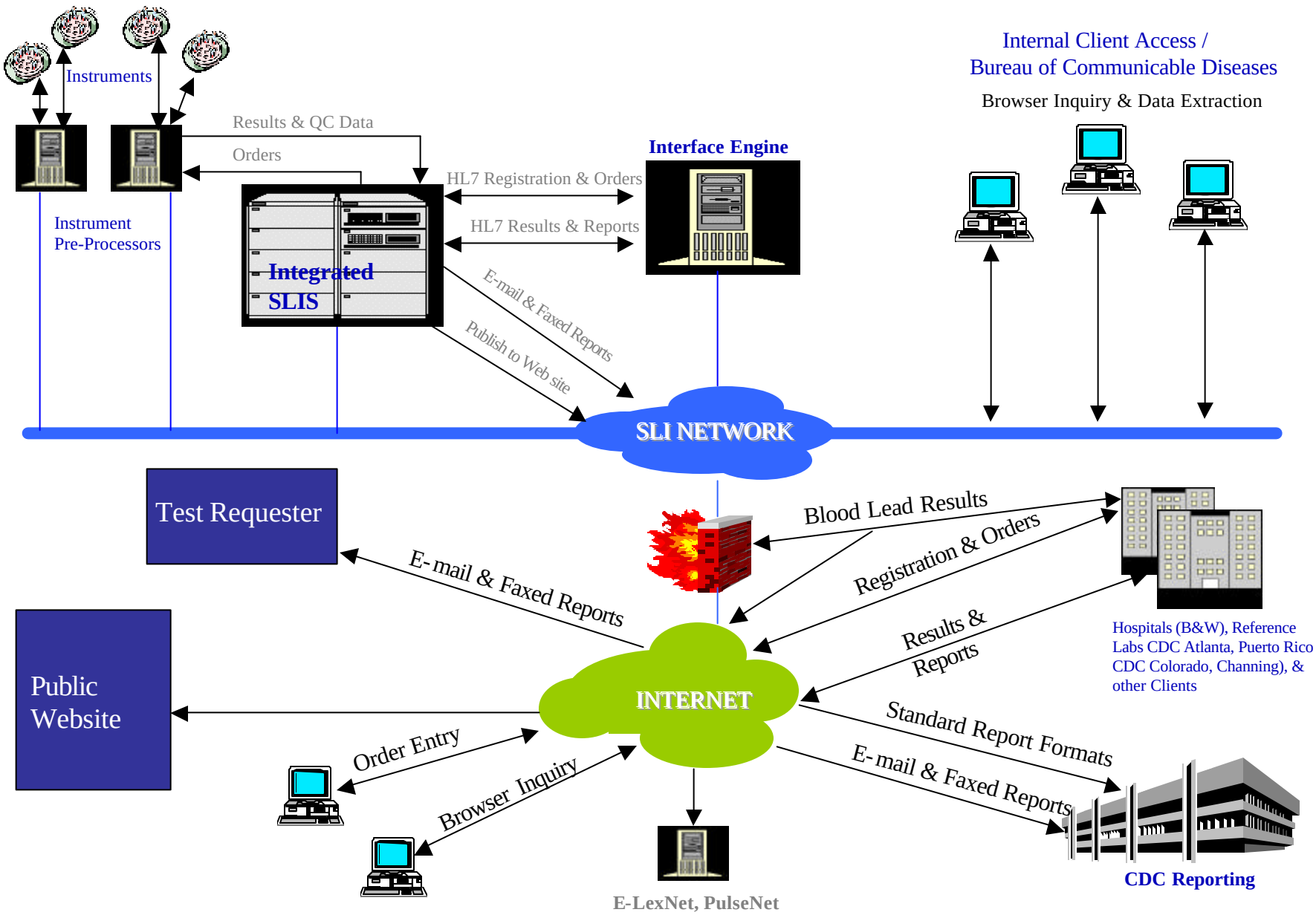


Impact of Surveillance on Survivability (Anthrax)

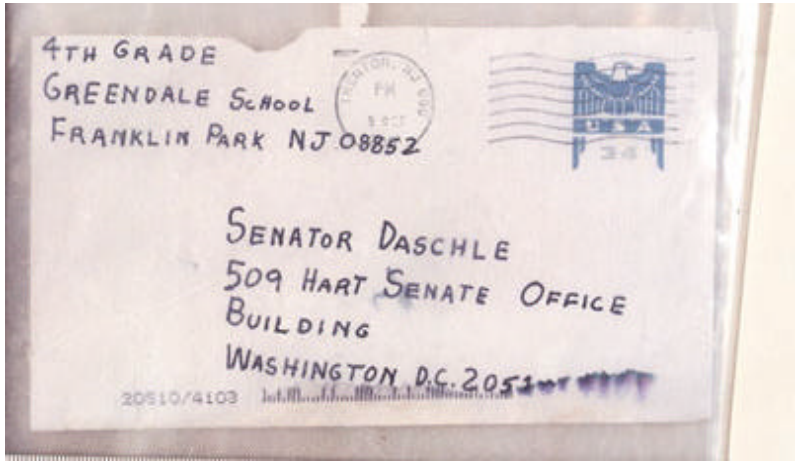


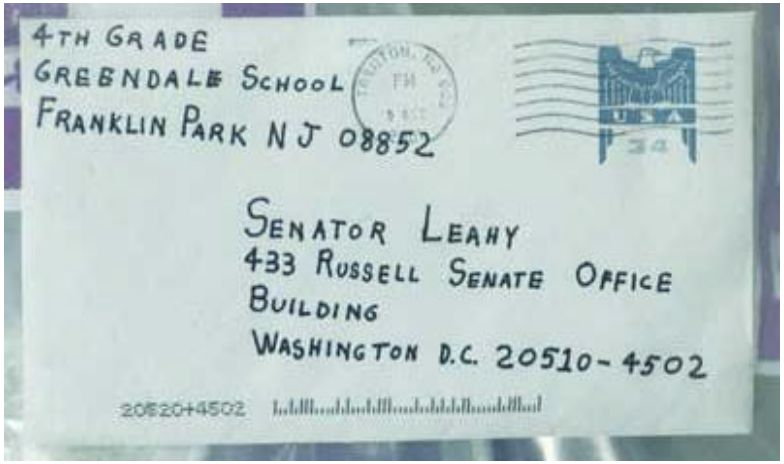


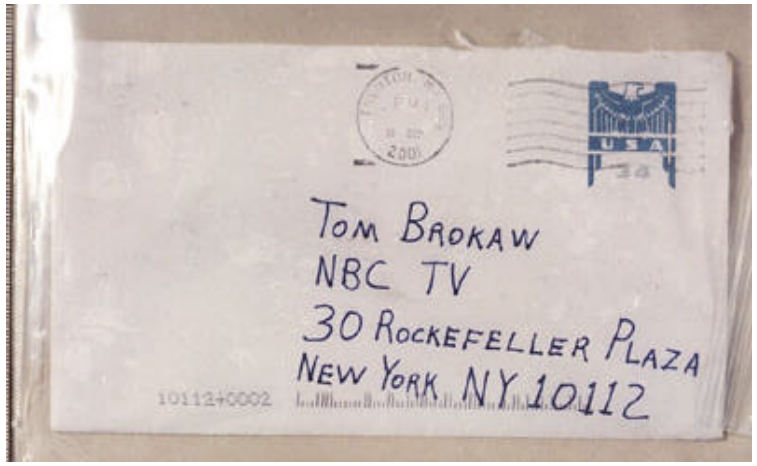
FRAMEWORK FOR AN INTEGRATED SLIS

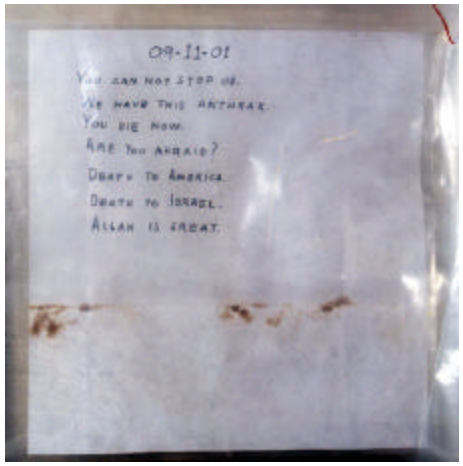


Anthrax Sent By Mail
September / October 2001









ENVIRONMENTAL SAMPLES

Description	Number Submitted	Risk / Testing Priority
U.S. Mail contaminated with anthrax	0	Low to high / High
U.S. Mail with a suspicious powder (not anthrax or other pathogen) with or without a threat letter	52	None / High
Powders, particulate matter and various liquid or solid material on surfaces of floors, walls, furniture, clothing, appliances or food	~800	None / Low
Clothing, household items, business products, etc. without evidence of powder, particulate matter, etc.	~1800	None / None

LRN validated methods and reagents available

- ***Bacillus anthracis:*** **C, PCR, TRF**
  Brucella **sp.: C**
- ***Francisella tularensis:*** **C, TRF**
- ***Yersinia pestis:*** **C, PCR, TRF**
- ***Clostridium botulinum:*** **C**

Conventional, polymerase chain reaction, time resolved fluorescence

Methods in development

• **Ricin: TRF**	• **Validation in progress**
• ***Brucella* sp.: PCR, TRF**	• **Validation by summer**
• ***Francisella tularensis:* PCR**	• **Validation by late summer**
• ***Staph.* entertoxin B: TRF**	• **EDA not estimated**
• ***Burkholderia mallei:* PCR**	• **Fall/Winter 2002**
• ***Burkholderia pseudomallei:* PCR**	• **Fall/Winter 2002**
• ***Coxiella burnetii:* TRF**	• **EDA not estimated**
• ***Clostridium botulinum:* EIA, TRF**	• **2004**

Testing Methods - Environmental

- 1- Gross examination- (environmental samples only)
- 2- Microscopic examination for bacteria and spores
- 3- DNA test methods
- 4- Culture (growth of bacteria on artificial media)

- Most samples tested by methods 1, 4
- U.S. Mail and similar items tested by methods1, 2, 4 and possibly 3
- Some items with no apparent contamination, no risk indicators tested by method 1 only